3. Discharges into surface waters including point source discharges (permitted), non- point source runoff (e.g., mining runoff), runoff from high-density confined livestock production facilities, agricultural irrigation drainwater discharges (surface and subsurface), runoff from overgrazed rangelands, municipal stormwater runoff, and illegal, release of contaminated ballast and spills of oil and other pollutants into enclosed bays, non-permitted discharges;

4. Overutilization for scientific, commercial, and educational purposes;

5. Logging, wildland fire and land management practices including fluctuations in agricultural land crop production, plowing, discing, grubbing, improper rangeland management, timber harvest practices, irrigation canal clearance and maintenance activities, levee maintenance, permitted and non-permitted use and application of pesticides, herbicides, fungicides, rodenticides, fumigants, fertilizers and other soil/water amendments, urban development, urban refuse disposal, land conversions, illegal fill of wetlands and conversion and reclamation of wetland habitats; and

6. Recreational disturbances, vandalism, road kills, off-road vehicle use, chronic disturbance, noise, disturbances from domestic dogs and equestrian uses.

The adoption of the CTR is certain to affect listed species dependent on the aquatic ecosystem. These effects are prolonged and pose significant threats to species already threatened or endangered throughout their range. Continued growth and development in the State of California is likely to exacerbate existing environmental conditions for species already in peril. It is the summation of the direct, indirect, and cumulative effects of the proposed action that the Services conclude are likely to adversely affect these species and their habitats throughout the State.

CONCLUSION

Findings of Not Likely to Jeopardize

After reviewing the current status of the species, the environmental baseline for the action area, the effects of EPA's proposed action and its modifications to the proposed action for selenium, mercury, PCP, cadmium, and formula based dissolved criteria and the cumulative effects, it is the Services' biological opinion that the promulgation of the CTR, as modified by EPA's December 16, 1999 letter, is not likely to jeopardize the continued existence of, or adversely modify critical habitats for species listed in Table 3. The Services reached these conclusions for the following reasons: (1) adverse effects associated with the modified proposed action will be sufficiently minimized by NPDES permit evaluation and early coordination and consultation with the Services on all other CWA programs subject to section 7 consultation; (2) the time frames and procedural commitments proposed by EPA in their December 16, 1999, letter provide assurance that future criteria will be adequately protective of listed species and critical habitat; and (3) that EPA will promulgate such criteria in a manner that will provide protection to listed species and/or critical

habitat. The modifications proposed by EPA in their December 16, 1999 letter, and revised by the Services are incorporated in the "Incidental Take Statement" section of this document and presented as non-discretionary terms and conditions.

INCIDENTAL TAKE STATEMENT

The Act prohibits take of endangered and threatened species without a special exemption. "Take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. "Harm" is further defined by the Services to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, feeding, migrating or sheltering. "Harass" is defined by the Service as an action that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), such incidental taking is not considered to be a prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary and must be implemented by EPA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. EPA has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Federal agency (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to the Services as specified in the terms and conditions in this incidental take statement.

The Services have developed the following incidental take statement based on the premise that the reasonable and prudent measures and terms and conditions will be implemented.

Amount or Extent of Take

In the accompanying biological opinion, the Services determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat when the reasonable and prudent measures and terms and conditions are implemented. The Services anticipate that take of listed species in the form of kill and harm is likely to occur as a result of the proposed implementation and compliance schedules for the CTR. Take may occur in the five year timelag that is likely to occur after the State adopts the CTR, and dischargers are granted a five year grace period within which they are to come into compliance with new criteria. Therefore, the Services anticipate the following levels of take may occur as a result of the

implementation of and compliance with the CTR, as modified in this opinion and by EPA's December 16, 1999, letter.

The Services are not including an incidental take authorization for marine mammals at this time because the incidental take of marine mammals has not been authorized under section 101(a)(5) of the Marine Mammal Protection Act and/or its 1994 Amendments. Following issuance of such regulations or authorizations, the Services may amend this biological opinion to include an incidental take statement for marine mammals, as appropriate.

The Services anticipate that take for the bald eagle, and California brown pelican, will be difficult to detect since these species (1) often transport prey items to their nests to feed their young; (2) may travel great distances, or are wide-ranging, and are not likely to be recovered following lethal or sublethal exposures; (3) after consuming a lethal or sublethal doses of contaminants may fly some distance from the aquatic ecosystem before being incapacitated and its death may go undetected; (4) sublethal doses of contaminants ingested may significantly impair essential behavioral patterns including feeding, sheltering, breeding, or immune response; and (5) young fed poisoned prey species by the adult or nestling may die at the nest site without being discovered. Therefore, the incidental take of bald eagles, California brown pelicans is expected to be in the form of killing or harming (as previously defined) as a result of lethal or sublethal exposure to environmental contaminants considered herein.

All bald eagles, California brown pelicans, California clapper rails, California least terns, light-footed clapper rails, marbled murrelets, and Yuma clapper rails that forage in the state that are associated with the proposed action are likely to be adversely affected as a result of the proposed action. The Service expects the likelihood of detecting take to be extremely low. Therefore, in order to insure the protection of listed species, reinitiation of formal consultation is required if a total of three (3) dead or sublethally affected bald eagles; or three (3) California clapper rails, or three (3) California least terns, or three (3) light-footed clapper rails, or three (3) marbled murrelets, or three (3) Yuma clapper rails, or if 1,000 or more California brown pelicans are found dead or sublethally affected by contaminants considered in this biological opinion.

The Services anticipate that incidental take of arroyo toad, California red-legged frog and Santa Cruz long-toed salamander will be difficult to detect since these species (1) are most vulnerable to the effects of mercury selenium or metals during their egg and/or larvae stage whose death may go undetected; (2) may experience undetected reduced hatchability, survival, and growth due to exposure to sublethal concentrations of mercury selenium or metals; (3) as juveniles may disperse from natal areas and are not likely to be recovered following lethal or sublethal early life stage exposures; (4) sublethal doses of mercury selenium or metals ingested may adversely affect them by significantly impairing essential behavioral patterns including feeding, sheltering, breeding, or immune response. Therefore, the incidental take of arroyo toad, California red-legged frog, and Santa Cruz long-toed salamander are expected to be in the form of killing or harming (as previously defined) as a result of lethal or sublethal exposure to environmental contaminants.

All arroyo toads, California red-legged frogs, southern California population of the mountain yellow-legged frog, and Santa Cruz long-toed salamanders occurring in California waterbodies are likely to be adversely affected as a result of the proposed action. The Service expects the likelihood of detecting take to be extremely low. In order to insure the protection of listed species, reinitiation of formal consultation is required if more than 10 toads, frogs, or salamanders are found dead or sublethally affected and pollutants considered in this biological opinion are found to be the causative agent.

The Service anticipates that incidental take of San Francisco garter snakes and giant garter snakes will be difficult to detect since the species (1) utilizes water and small mammal burrows for escape cover; (2) after consuming a lethal or sublethal doses of contaminants may travel some distance from the aquatic ecosystem before its death and may go undetected; and (3) sublethal doses of contaminants ingested may adversely affect them by significantly impairing essential behavioral patterns including feeding, sheltering, breeding, or immune response. Therefore, the incidental take of San Francisco garter snakes is expected to be in the form of killing or harming (as previously defined) as a result of lethal or sublethal exposure to environmental contaminants considered herein.

All San Francisco garter snakes and giant garter snakes in the action area are likely to be adversely affected as a result of the proposed action. The Service expects the likelihood of detecting take to be extremely low. Therefore, in order to insure the protection of listed species, reinitiation of formal consultation is required if one (1) dead or sublethally affected San Francisco garter snake or giant garter snake is discovered and contaminants considered in this biological opinion are confirmed to be the causative agent.

The Services anticipate that incidental take of all listed fish and invertebrate species considered in this opinion will be difficult to detect since these species (1) are aquatic in nature, and there is a low likelihood of discovering sublethally or lethally affected individuals; (2) may be directly lost to other environmental and human-caused conditions due to a reduced capacity to escape predation or other human induced habitat conditions; (3) are small bodied and/or affected at an early life stage and are not likely to be detected; and (4) losses may be masked by seasonal or inter-annual fluctuation in numbers or by other causes such as ocean conditions that lie outside the action area.

All aquatic fish and invertebrate species in California waterbodies are likely to be adversely affected as a result of the proposed action. The Services expect the likelihood of detecting take to be extremely low. In order to insure the protection of listed species, reinitiation of formal consultation is required if fish kills of any listed non-salmonid species considered in this biological opinion exceed 1,000 individuals and contaminants considered in this biological opinion are confirmed to be the causative agent. In addition, reinitiation of formal consultation is required if 10 or more dead or sublethally affected anadromous salmonids are discovered and contaminants considered in this biological opinion are confirmed to be the causative agent. This requirement shall apply whenever the combined total of anadromous fish from all ESUs exceeds

10 in any given year.

In the event of exceedance of allowed take the EPA must immediately provide an explanation of the causes of the taking and shall review with the Services the need for possible modification of the reasonable and prudent measures listed below. Take of an individual of any non-fish species is not in violation of the Act as long as the terms and conditions as specified in this biological opinion were adhered to at the time of the incident.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of the species described below:

1. Minimize the incidental take associated with the proposed numeric criteria for selenium for the following listed species:

BIRDS
Aleutian Canada goose
Bald eagle
California brown pelican
California clapper rail
California least tern
Light-footed clapper rail
Yuma clapper rail

MAMMALS
Southern sea otter

FISH
Bonytail chub
Chinook salmon (California ESUs)
Coho salmon (California ESUs)
Delta smelt
Desert pupfish
Lahontan cutthroat trout
Little Kern Golden Trout
Lost River Sucker
Modoc Sucker
Mohave tui chub
Owens pupfish
Owens tui chub
Paiute cutthroat trout
Razorback sucker
Sacramento splittail
Shortnose sucker
Steelhead trout(California ESUs)
Tidewater goby
Unarmored threespine stickleback

REPTILES AND AMPHIBIANS
Arroyo toad
California red-legged frog
Giant garter snake
San Francisco garter snake
Santa Cruz long-toed salamander

INVERTEBRATES
California freshwater shrimp
Conservancy fairy shrimp
Longhorn fairy shrimp
Riverside fairy shrimp
San Diego fairy shrimp
Shasta crayfish
Vernal pool fairy shrimp
Vernal pool tadpole shrimp

2. Minimize the incidental take associated with the proposed numeric criteria for Mercury for the following listed species:

BIRDS
Aleutian Canada goose
Bald eagle
California brown pelican
California clapper rail
California least tern
Light-footed clapper rail
Yuma clapper rail

MAMMALS
Southern sea otter

FISH
Chinook salmon (California ESUs)
Coho salmon (California ESUs)
Delta smelt
Desert pupfish
Lahontan cutthroat trout
Little Kern Golden Trout
Lost River Sucker
Modoc Sucker
Mohave tui chub
Owens pupfish
Owens tui chub
Paiute cutthroat trout
Sacramento splittail
Shortnose sucker
Steelhead trout(California ESUs)
Tidewater goby
Unarmored threespine stickleback

REPTILES AND AMPHIBIANS
Arroyo toad
California red-legged frog
Giant garter snake
San Francisco garter snake
Santa Cruz long-toed salamander

INVERTEBRATES
California freshwater shrimp
Conservancy fairy shrimp
Longhorn fairy shrimp

Riverside fairy shrimp
San Diego fairy shrimp
Shasta crayfish
Vernal pool fairy shrimp
Vernal pool tadpole shrimp

3. Minimize the incidental take associated with the proposed numeric criteria for PCP on the following listed species:

FISH
Chinook salmon (California ESUs)
Coho salmon (California ESUs)
Delta smelt
Lahontan cutthroat trout
Little Kern golden trout
Lost River sucker
Modoc sucker
Paiute cutthroat trout
Sacramento splittail
Shortnose sucker
Steelhead (California ESUs)

4. Minimize the incidental take associated with the proposed numeric criteria for cadmium on the following listed species:

Chinook salmon (California ESUs)
Coho salmon (California ESUs
Lahontan cutthroat trout
Little Kern golden trout
Paiute cutthroat trout
Steelhead (California ESUs)
Unarmored threespine stickleback

5. Minimize the incidental take associated with the proposed formula based dissolved metals criteria on the following listed species:

FISH
Bonytail chub
Chinook salmon (California ESUs)
Coho salmon (California ESUs)
Delta smelt
Lahontan cutthroat trout
Little Kern golden trout
Lost River sucker

INVERTEBRATES
California freshwater shrimp
Conservancy fairy shrimp
Longhorn fairy shrimp
Riverside fairy shrimp
San Diego fairy shrimp
Shasta crayfish

Modoc sucker
Mohave tui chub
Owens pupfish
Owens tui chub
Paiute cutthroat trout
Razorback sucker
Sacramento splittail
Shortnose sucker
Steelhead (California ESU's)
Tidewater goby
Unarmored threespine stickleback
Vernal pool fairy shrimp
Vernal pool tadpole shrimp

REPTILES AND AMPHIBIANS
Arroyo toad
California red-legged frog
Giant garter snake
San Francisco garter snake
Santa Cruz long-toed salamander

MAMMALS
Southern sea otter

Terms and Conditions

In order to comply with the Act, EPA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure number one for the proposed numeric criteria for selenium.

b) EPA will reserve (not promulgate) the proposed acute aquatic life criterion for selenium in the final CTR.

b) EPA will revise its recommended 304(a) acute and chronic aquatic life criteria for selenium by January 2002. In revising these criteria EPA will work in close cooperation with the Services, inviting scientists from each Service to participate on peer review panels and as observers on criteria revision teams.

c) EPA will propose revised acute and chronic aquatic life criteria for selenium in California by January 2003.

d) If EPA's proposed acute or chronic criterion for selenium in California are less stringent than the criteria suggested in this opinion (≤ 2 µg/L), EPA will provide the Services with a biological evaluation/assessment and request for formal consultation on the revised criterion (or criteria) by January 2003. EPA's biological evaluation/assessment on the revised criterion (or criteria) will specifically address semi-aquatic wildlife species.

e) EPA will promulgate final acute and chronic criteria for selenium in California no later than June 2004.

f) EPA will provide the Services in California with semi-annual reports regarding the status

of EPA's revision of the selenium criteria and accompanying draft biological evaluation/assessment associated with the revision. The first report will be provided by June 30, 2000.

g) EPA will identify water bodies in the State of California where selenium criteria necessary to protect federally listed species are not met (selenium-impaired water bodies), and will annually submit to the Services a list of NPDES permits due for review to allow the Services and EPA to identify any potential for adverse effects on listed species and/or their habitats. A list of selenium-impaired water bodies and the first NPDES permit review shall occur prior to October 2000. EPA will annually submit to the Services a list of NPDES permits due for review to allow the Services and EPA to identify any potential for adverse effects on listed species and/or their habitats. The first NPDES permit review shall occur prior to October 2000.

h) EPA will coordinate with the Services on any permits containing limits for selenium that the Services (or EPA) identify as having potential for adverse effects on listed species and/or their habitat in accordance with procedures agreed to by the Agencies in the draft MOA published in the Federal Register at 64 FR 2755 (January 15, 1999). If discharges are identified that have the potential to adversely affect federally listed species and/or critical habitat, EPA will work with the Services and the State of California to address the potential effects to the species. This will include, where appropriate, decreasing the allowable discharge of selenium consistent with this opinion. Among other options to resolve the issue, the EPA may make a formal objection to a permit and federalize the permit where consistent with EPA's CWA authority. If EPA objects to a NPDES permit, EPA will follow the permit objection procedures outlined in 40 CFR 123.44 and coordinate with the Services. If EPA assumes permit issuing authority for a NPDES permit, EPA will consult with the Services prior to issuance of the permit (as a federal action) as appropriate under section 7 of the ESA. Under such circumstances EPA would prepare and submit a biological evaluation/assessment on those permits for purposes of completing consultation.

2. The following terms and conditions implement reasonable and prudent measure number two for the proposed numeric criteria for mercury.

a) EPA will reserve (not promulgate) the proposed freshwater and saltwater acute and chronic aquatic life criteria for mercury in the final CTR.

b) EPA will promulgate a human health criterion of 50 ng/l or 51 ng/l as designated within the final CTR for mercury only where no more restrictive federally-approved water quality criteria are now in place (e.g., the promulgation will not affect portions of San Francisco Bay).

c) EPA will revise its recommended 304(a) human health criteria for mercury by January

2002. These criteria should be sufficient to protect federally listed aquatic and aquatic-dependent wildlife species. If the revised criteria are less stringent than the range of criteria concentrations suggested by the Services to protect listed species in this opinion or the EPA's mercury report to Congress piscivorous wildlife values, EPA will provide the Services with a biological evaluation/assessment and request for formal consultation on the revised criteria by the time of the proposal. The Services believe protective concentrations for mercury in water are generally on the order of $\leq$ 2.0 ng/L as total Hg or equivalent methylmercury concentration as determined by site specific data.

d) EPA will propose revised human health criteria for mercury in California by January 2003.

e) EPA will work in close cooperation with the Services to evaluate the degree of protection afforded to federally listed species by the revised criterion. EPA will provide the Services in California with semi annual reports regarding the status of EPA's revision of the mercury criterion and/or any draft biological evaluation/assessment associated with the revision. The first report will be provided by June 30, 2000. EPA will invite scientists representing the Services to participate in efforts to jointly evaluate mercury concentrations protective of fish and wildlife.

f) EPA will identify water bodies in the State of California where mercury criteria necessary to protect federally listed species are not met (mercury-impaired water bodies), and will annually submit to the Services a list of NPDES permits due for review to allow the Services and EPA to identify any potential for adverse effects on listed species and/or their habitats. EPA will annually submit to the Services a list of NPDES permits due for review to allow the Services and EPA to identify any potential for adverse effects on listed species and/or their habitats from mercury. A list of mercury-impaired water bodies and the first NPDES permit review shall occur prior to October 2000.

g) EPA will coordinate with the Services on any permits containing limits for mercury that the Services (or EPA) identify as having potential for adverse effects on listed species and/or their habitat in accordance with procedures agreed to by the Agencies in the draft MOA published in the Federal Register at 64 FR 2755 (January 15, 1999). If discharges are identified that have the potential to adversely affect federally listed species and/or critical habitat, EPA will work with the Services and the State of California to address the potential effects to the species. This will include, where appropriate, decreasing the allowable discharge of mercury consistent with this opinion. Among other options to resolve the issue, the EPA may make a formal objection to a permit and federalize the permit where consistent with EPA's CWA authority. If EPA objects to a NPDES permit, EPA will follow the permit objection procedures outlined in 40 CFR 123.44 and coordinate with the Services. If EPA assumes permit issuing authority for a NPDES permit, EPA will consult with the Services prior to issuance of the permit (as a federal action) as appropriate under section 7 of the ESA. Under such circumstances EPA would

prepare and submit a biological evaluation/assessment on those permits for purposes of completing consultation.

3. The following terms and conditions implement reasonable and prudent measure number three for the proposed numeric criteria for PCP.

a) By March of 2001, EPA will review, and if necessary, revise its recommended 304(a) chronic aquatic life criterion for PCP sufficient to protect federally listed species and/or their critical habitats. In reviewing this criterion, EPA will generate new information on PCP regarding the toxicity of commercial grade PCP and the interaction of temperature and dissolved oxygen on sublethal acute and chronic toxicity to early life stage salmonids. These tests will include at least one anadromous species and produce data on chronic toxicity of PCP to listed species.

b) If as a result of these new studies EPA, revises its recommended 304(a) criterion, EPA will then propose the revised PCP criterion in California by March 2002. If the revised criterion is less stringent than the range of criterion concentrations suggested by the Services to protect listed species in this opinion (0.2 to 2.0 µg/L at pH of 7.8) or if EPA determines that a criterion revision is not necessary, EPA will provide the Services with a biological evaluation/assessment and request for formal consultation by March 2002.

c) If EPA proposes a revised PCP criterion by March 2002, EPA will promulgate a final criterion as soon as possible, but no later than 18 months, after proposal.

d) EPA will keep the Services informed regarding the status of EPA's review of the PCP chronic aquatic life criterion and any draft biological evaluation/assessment associated with the review with semi-annual reports.

e) EPA will continue to use existing NPDES permit information to identify water bodies which contain permitted PCP discharges and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Reclamation Act (RCRA) sites that potentially contribute PCP to surface waters. EPA, in cooperation with the Services, will review these discharges and associated monitoring data and permit limits, to determine the potential for the discharge to impact federally listed species and/or critical habitats. The first review of PCP information by EPA shall occur prior to October 2000.

f) If discharges are identified that have the potential to adversely affect federally listed species and/or critical habitat, EPA will work with the Services and the State of California to address the potential effects to these species. This will include, where appropriate, decreasing the allowable discharge of PCP to protective concentrations consistent with this opinion. Among other options to resolve the issue, the EPA may make a formal objection to a permit and federalize the permit where consistent with EPA's CWA authority. If EPA

objects to a NPDES permit, EPA will follow the permit objection procedures outlined in 40 CFR 123.44 and coordinate with the Services. If EPA assumes permit issuing authority for a NPDES permit, EPA will consult with the Services prior to issuance of the permit (as a federal action) as appropriate under section 7 of the ESA. Under such circumstances EPA would prepare and submit a biological evaluation/assessment on those permits for purposes of completing consultation. EPA will give priority to review data for fresh water bodies within the range of federally listed salmonids that currently lack a MUN designation as specified in the Regional Water Quality Control Boards' Basin Plans.

4. The following terms and conditions implement reasonable and prudent measure number four for the proposed numeric criteria for Cadmium.

a) EPA will revise the 304(a) chronic aquatic life criterion for cadmium such that it will be protective of sticklebacks and salmonids, by no later than January 2001 and will propose the revised criterion in California by January 2002. EPA will not wait for new criteria models to be developed in revising the criterion, but may use these models if they are available by this date. EPA will promulgate final criteria as soon as possible, but no later than 18 months, after proposal.

b) If the revised criterion is less stringent than the range of protective criteria concentrations proposed by the Services in this opinion (0.096 µg/L to 0.180 µg/L), EPA will provide the Services with a biological evaluation/assessment and request for formal consultation on the revised criterion by the time of the proposal.

c) EPA will provide the Services with semi-annual updates regarding the status of EPA's revision of the chronic aquatic life criterion revision for cadmium and any draft biological evaluation/assessment associated with the revision.

d) EPA will continue to consult, under section 7 of ESA, with the Services on revisions to water quality standards contained in Basin Plans submitted to EPA under CWA section 303 and affecting waters of California containing federally listed species and/or their habitats.

e) EPA will annually submit to the Services a list of NPDES permits due for review and RCRA or CRCLA sites where cadmium is a pollutant of concern. EPA, in cooperation with the Services, will review these discharges and associated monitoring data and permit limits to identify any potential for adverse effects on listed species and/or their habitats. EPA will coordinate with the Services on any permits that the Services or EPA identify as having potential for adverse effects on listed species and/or their habitat. By December 2000 EPA will identify all cadmium discharges from point sources and cadmium contaminated RCRA or CERCLA sites in California that may affect listed species and will provide a report to the Services by December 31, 2000.

f) If discharges are identified that have the potential to adversely affect federally listed species and/or critical habitat, EPA will work with the Services and the State of California to address the potential effects to the species. This will include, where appropriate, reducing the permissible concentrations of cadmium consistent with this opinion. Among other options to resolve the issue, the EPA may make a formal objection to a permit and federalize the permit where consistent with EPA's CWA authority. If EPA objects to a NPDES permit, EPA will follow the permit objection procedures outlined in 40 CFR 123.44 and coordinate with the Services. If EPA assumes permit issuing authority for a NPDES permit, EPA will consult with the Services prior to issuance of the permit (as a federal action) as appropriate under section 7 of the ESA. Under such circumstances EPA would prepare and submit a biological evaluation/assessment on those permits for purposes of completing consultation.

5. The following terms and conditions implement reasonable and prudent measure number five for the proposed formula based dissolved metals criteria.

a) By December of 2000, EPA, in cooperation with the Services, will develop sediment criteria guidelines for cadmium, copper, lead, nickel and zinc, and by December of 2002, for chromium and silver. When the sediment guidance for cadmium, copper, lead, nickel and zinc is completed, Region 9, in cooperation with the Services, will draft implementation guidelines for the State of California to protect federally listed threatened and endangered species and critical habitat in California. EPA will submit semi-annual reports to the Services in California on the status of sediment guideline development. The first report will be due June 30, 2000.

b) Before the end of 2000, EPA, in cooperation with the Services, will issue two clarifications to the *Interim Guidance on the Determination and Use of Water-Effects Ratios for Metals* (EPA 1994) concerning the use of calcium-to-magnesium ratios in laboratory water and the proper acclimation of test organisms prior to testing in applying water-effects ratios (WERs). The EPA shall also allow the use of WERs only when the site specific LC_{50} and the laboratory LC_{50} are significantly different using a 95% confidence interval.

c) By June of 2003, EPA, in cooperation with the Services, will develop a revised criteria calculation model based on best available science for deriving aquatic life criteria on the basis of hardness (calcium and magnesium), pH, alkalinity, and dissolved organic carbon (DOC) for metals. This will be done in conjunction with "Other Actions." below. EPA will submit semi-annual reports to the Services on the status of the development of the revised criteria calculations model for metals. The first report will be provided by June 30, 2000.

d) In certain instances, the State of California or specific dischargers may develop site-specific translators, using EPA or equivalent state/tribe guidance, to translate dissolved

metals criteria into total recoverable permit limits. A translator is the ratio of dissolved metal to total recoverable metal in the receiving water downstream from a discharge. A site-specific translator is determined on site-specific effluent and ambient data. Whenever a threatened or endangered species or critical habitat is present within the geographic range downstream from a discharge where a State developed translator will be used and the conditions listed below exist, EPA will work, in cooperation with the Services and the State of California, to use available ecological safeguards to ensure protection of federally listed species and/or critical habitat. Ecological safeguards include: (1) sediment guidelines; (2) biocriteria; (3) bioassessment; (4) effluent and ambient toxicity testing; or (5) residue-based criteria in shellfish.

(i) Conditions for use of ecosystem safeguards:

1. A water body is listed as impaired on the CWA section 303(d) list due to elevated metal concentrations in sediment, fish, shellfish or wildlife; or,

2. A water body receives mine drainage; or,

3. Where particulate metals compose a 50% or greater component of the total metal measured in a downstream water body in which a permitted discharge (subject to translator method selection) is proposed and the dissolved fraction is equal to or within 75% of the water quality criteria.

(ii) Whenever a threatened or endangered species is present downstream from a discharge where a State developed translator will be used, EPA will work with the permitting authority to ensure that appropriate information, which may be needed to calculate the translator in accordance with the applicable guidance, will be obtained and used. Appropriate information includes:

1. Ambient and effluent acute and chronic toxicity data;
2. Bioassessment data; and/or
3. An analysis of the potential effects of the metals using sediment guidelines, biocriteria and residue-based criteria for shellfish to the extent such guidelines and criteria exist and are applicable to the receiving water body.

(iii) EPA, in cooperation with the Services, will review these discharges and associated monitoring data and permit limits, to determine the potential for the discharge to impact federally listed species and/or critical habitats. If discharges of metals are identified that have the potential to adversely affect federally listed species and/or critical habitat, EPA will work with the Services and the State of California to address these adverse impacts in accordance with procedures agreed to by the Agencies in the draft MOA published in the Federal Register at 64 FED REG. 2755 (January 15, 1999). Among other options to resolve the issue, the EPA may make a formal objection to a permit, and federalize the

permit where consistent with EPA's CWA authority. If EPA objects to a NPDES permit, EPA will follow the permit objection procedures outlined in 40 CFR 123.44 and coordinate with the Services. If EPA assumes permit issuing authority for a NPDES permit, EPA will consult with the Services prior to issuance of the permit (as a federal action) as appropriate under section 7 of the ESA.

Other Actions

EPA will initiate a process to develop a national methodology to derive site-specific criteria to protect federally listed threatened and endangered species, including wildlife, in accordance with the draft MOA between EPA and the Services concerning section 7 consultations. EPA will invite input and participation from the Services in developing this methodology and will share reports and written products as this methodology progresses. Annual reports on the status of this methodology development will be provided to both the Divisions of Environmental Contaminants and Endangered Species of the Fish and Wildlife Service's Arlington Office, and to the Silver Springs Office of Protected Resources of the National Marine Fisheries Service.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, help implement recovery plans, or to develop information.

The Services recommend the following additional actions to promote the recovery of federally listed species and their habitats:

1. The EPA should quantify the toxic effects of selenium and mercury individually and in combination to listed reptiles and amphibians using appropriate surrogate species. Research should include the most toxic forms of selenium and mercury and include full life cycle exposure protocols including dietary routes of exposure and maternal transfer as a route of embryonic exposure.

2. The EPA should conduct research on mercury residues in amphibian tissues which would allow prediction of adverse effects from mercury residues found in field collected frogs.

3. The EPA should consider developing a tissue based criteria for mercury and selenium protective of reproduction of aquatic dependent species of fish and wildlife in California.

4. The EPA should, in cooperation with the Service and USGS, conduct research on the toxic effects of selenium and mercury, individually and in combination, to the reproduction of

fish-eating birds using appropriate surrogate species. Research should include the most toxic forms of selenium and mercury and include sensitive life stages and exposure protocols that include dietary routes of exposure to females and maternal transfer as a route of embryonic exposure.

5. The EPA should use existing authorities to develop or require testing to develop site-specific bioaccumulation factors for mercury to assess risk of mercury exposure to bald eagles throughout California.

6. The EPA in conjunction with the San Francisco Bay Regional Water Quality Control Board and Central Valley Regional Water Quality Control Board should assess the influx, fate, and transport of mercury into the San Francisco Bay Estuary to facilitate the development of mercury control strategies.

7. The EPA should conduct toxicity tests in waters where particulate concentrations are great and dissolved metal concentrations are low. These studies should ideally include a dietary exposure component (*in situ* studies) to determine the effects of these discharges on the growth, survival, and reproduction on listed fishes and crustaceans.

In order for the Services to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation and conference on the proposed CTR as outlined in your August 5, 1997, Federal Register notice and your October 27, 1997, request for initiation of formal consultation. As provided in 50 **CFR** 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the proposed action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The incidental take statement provided with this conference opinion does not become effective for the Northern California steelhead ESU, the Southern California population of the mountain yellow-legged frog, Santa Ana sucker, or the Southern California population of the California tiger salamander, until the species are listed and the conference opinion is adopted as the biological opinion. No take of the Northern California steelhead ESU, Southern California population of the mountain yellow-legged frog, Santa Ana sucker, or the Southern California

population of the California tiger salamander is allowed between the time they are listed and the adoption of the conference opinion as a biological opinion is authorized. You may request the Services to immediately adopt this conference opinion as a biological opinion if these species are listed. The request must be in writing. Provided none of the reinitiation criteria apply, the Services will agree with EPA's request.

If you have any questions regarding this response please feel free to contact Mr. Wayne White at the Service's Sacramento Fish and Wildlife Office at (916) 979-2710, or Mr. Jim Lecky at the National Marine Fisheries Service Southwest Regional Office at (562) 980-4015.

Sincerely,

Michael J. Spear
Manager, California/Nevada Operations Office
U.S. Fish and Wildlife Service

Rodney R. Mc Innis
Acting Regional Administrator
Southwest Regional Office
National Marine Fisheries Service